JUNE 8, 1998

COMPUTERWORLD emmerce

THE MAGAZINE FOR ELECTRONIC COMMERCE STRATEGISTS

FROM THE EDITORS OF COMPUTERWORLD
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friend OR FOE?

Web-based CUSTOMER SERVICE embraces some, alienates others

Plus
- CREATING AFFINITY MARKETS
- CLOSE-UP OF AN EC INNOVATOR

FROM THE EDITORS

It's About Time

It's taken perhaps half a decade for the Internet to become business-friendly. Now it's got to become consumer-friendly — a much tougher proposition.

A nasty surprise awaited leading-edge Web merchants that just slapped together storefronts in hopes of making big sales with minimal outlay and overhead. Those that survived learned it takes ingenuity, persistence, technical savvy and plenty of human resources to find, get and keep customers on the Web. The bottom line is that consumers expect the Web experience to be faster and easier — and, ideally, cheaper and more fun — than buying in a regular store. Otherwise, why bother to mess with it?

E-tailers finally seem to be waking up and smelling the virtual coffee. That's why they're beefing up customer service by adding head count and/or knowledge-based systems that resolve common problems and questions (see story page 8). They're also handing over chunks of cash to fellow Web sites that attract certain types of visitors, in return for running context-sensitive ads and promotions or serving up links (see story page 14).

To many consumers, the **WEB** remains **TEMPTING** and scary, like a Dungeons and Dragons **MAZE**.

They are personalizing the shopping experience, using information about customers' previous purchases and browsing habits (see story page 18).

But to many consumers, the Web remains tempting and scary, like a Dungeons and Dragons maze. Around the corner may be treasure or an unprincipled monster who'll take your most valued possessions — your identity and credit-card number — and use them against you.

Customers' lack of trust is already hurting merchants in the pocketbook. Intellipost, an incentive-driven, Web direct-mail advertising vendor, has found that of customers who declare their buying intentions, nearly 75% change their minds when they have to provide personal and credit-card information, according to President Steve Markowitz.

Various industry groups have been working on ways to give Web users more control of their personal information on the Web. Truste is one example (see story page 4). Another is the P3P working group within the World Wide Web Consortium, which has been developing tools that allow users to determine ahead of time just what information a Web site can extract from their browsers.

The Commerce Department is holding a privacy forum at the end of this month that will look at the progress of the industry's self-regulation on privacy issues. The forum will give Web merchants "a chance to say, 'This is what we're working on — tools or programs to address privacy regulation' and express opinions," said Truste executive director Susan Scott.

This may well be their last chance to do it voluntarily before the Federal Trade Commission steps in, enacts various pending privacy laws and enforces them.

emmerce COMPUTERWORLD

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THE Exchange

TRENDS, IDEAS AND ISSUES IN ELECTRONIC COMMERCE

Web Traffic on Hyperdrive

DSL could beat ISDN as Web consumers' broadband technology of choice, but carriers have some technical and ROI issues to resolve

BY CHERYL GERBER

Despite obstacles, telecom industry big wheels are betting hard on DSL as the broadband technology that will free electronic commerce from its bandwidth constraints. They may have wagered well — early Digital Subscriber Line (DSL) providers have already carved out promising market niches.

When US West, Inc. launched its range of DSL services in November, for example, 1,714 customers signed up the first week. Orders exceeded projections by 200%, prompting the local exchange carrier (LEC) to expand DSL into 40 cities and 14 states. "Our biggest challenge today is trying to keep up with the tremendous demand," said Greg Gum, director of US West megabit services.

Much of that demand — present and future — comes from the electronic commerce sector, according to Gum.

Direct sales apparel and care manufacturers, for instance, say they want to use DSL connections to reduce current online charges and cut costs of traditional communications advertising and sales venues by moving them online, Gum said.

"Forty percent of US West's current [DSL] subscriptions are to consumers replacing 56K modems," Gum said. The other 60% are home/office, small business and high-technology company teleworkers who need remote LAN access, he added.

As a persistent connection over existing copper lines, DSL offers two main advantages over existing broadband services: higher speed and lower cost.

One DSL pioneer, Santa Clara, Calif.-based Covad Communications Co., offers

Commerce PULSE

Earning Trust

So far, a concerted industry effort to come up with standard policies for user privacy and data disclosure has found few takers among Web site owners.

Truste, jointly formed by Commerce.net and the Electronic Frontier Foundation, is a stab at having the industry design and self-regulate codes of conduct for Web data privacy and disclosure. The idea is to come up with common guidelines by which a site lets visitors know what personal information it is collecting from them – either clandestinely via cookie or via fill-in forms – and how that information might be used. Members that meet Truste's criteria get to display its seal on their sites.

Truste has 110 members, about a third of which actually sell products, executive director Susan Scott said. Current members include Lands' End, Inc., Excite, Inc., Netcom, *The New York Times* and *Wired* magazine. Disney, Geocities and ZDnet are in the process of being certified, Scott said, and Infoseek and Lycos are "good bets" to be certified soon.

Still, that's just a handful out of the vast Web galaxy that includes 500,000 to 1 million (depending on who's doing the

MARY KING

COMMERCE BY NUMBERS

SHELF LIFE OF BANNER ADS
Two weeks, or 200,000 to 400,000 impressions

Source: Recent Yahoo and Infoseek studies

WEB AD REVENUE PER USER

1997:	**$15**
2000:	**$39.30**

Source: BancAmerica Corp., Robertson, Stephens & Co. estimates

WEB VS. TOTAL AD EXPENDITURES

	Web	*Non-Web*
1997	***$600M***	**$133T**
1998	**$4B**	**$155T**

Source: Veronis Suhler & Associates/BancAmerica Corp., Robertson, Stephens & Co. estimates

INTERNET TRANSACTION REVENUE PER USER

1997:	**$24**
2000:	**$99**

Source: BancAmerica Corp., Robertson, Stephens & Co. estimates

DSL services that range from 144K bit/sec. two-way access priced at $90 per month (flat rate) to a 1.1M bit/sec. two-way connection for $195 per month.

The LEC's DSL services target homes, small businesses and teleworkers who want to upgrade from 56K bit/sec. analog modems or cut the high usage-based costs of Integrated Services Digital Network (ISDN) lines. A 128K bit/sec. ISDN connection costs customers about $500 a month in per-usage phone bills.

UNLIMITED ACCESS

And DSL has an edge over its chief competitor, cable modems. "Copper pair goes more places than cable," noted John Girard, a Gartner Group, Inc. analyst in Stamford, Conn.

In February, Covad set its sites on electronic commerce, launching a partner program for Internet service providers (ISP) to bundle DSL with a variety of business Web services.

DSL could enhance the Web commerce experience. Industry observers say DSL

> **DSL** has an **EDGE** over its chief competitor, cable **MODEMS** – it can go more **PLACES.**

users stay online longer to do electronic commerce filtering or to research a broader variety of purchases before they buy. The increased bandwidth also encourages Web content developers to enhance Web sites with CD-quality audio and video, rendering electronic commerce more appealing, noted Lou Pelosi, Covad director of marketing.

DSL in its present form does have some drawbacks. For one, it is distance-constrained within three to four miles of the local loop. The farther away DSL users are from their telephone company's central offices, the lower the speed. Consequently, the technology is available now to only about 40% of the population located in metropolitan areas near telephone companies' central offices. As DSL matures, it will become available over longer distances.

Further, the initial investment may discourage small ISPs. "There's a high up-front cost to connect to the LEC network. It's more than $20,000. But we look at it as necessary to provide our value-added services," said Joe Peck, DSL product manager at Concentric Network Corp., an ISP in Cupertino, Calif.

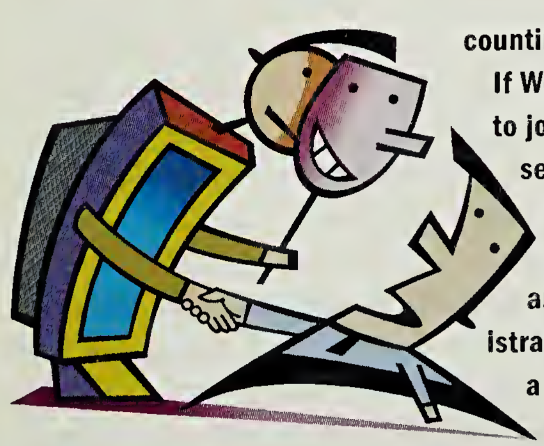
Another impediment to DSL adoption is that some LECs are leery of cannibalizing their T1 customer base, said John Hunter, an analyst at TeleChoice, Inc. in Verona, N.J.

On the positive side, leading PC, telecom and networking companies seem to be coalescing around two International Telecommunications Union (ITU) DSL standards: the established Asymmetric DSL and G.Lite, a PC version that is now awaiting ITU approval.

If PC manufacturers can create consumer and business awareness of DSL value and get DSL PCAs on the market soon, that will expand the market for electronic commerce twofold, Hunter noted.

Gerber is a freelance writer in Kingston, N.Y.

e **Concentric Network**
www.concentric.net
Covad Communications
www.covad.com
US West
www.uswest.com



counting) commercial sites. If Web merchants refuse to join this attempt at self-regulation, the Federal Trade Commission (FTC) and the Clinton administration will take this as a message that the government must step in, Scott said. Indeed, the FTC has been surveying some 1,200 Web sites to determine how many owners are publishing privacy policy statements.

The report will be published this month. While numbers aren't available, industry scuttlebut has it that reviewers have found a miniscule percentage of sites with published privacy policy statements.

Meanwhile, users are making their dissatisfaction felt. Georgia Tech's 1997 survey, for example, found that more than 71% of respondents wanted new laws to protect their online privacy.

– ELISABETH HORWITT

MARK SHAVER

To Julio Gomez, the Internet and securities trading are natural soul mates. Trades long ago were reduced to digital bits, says Gomez, a former Forrester Research, Inc. analyst turned Web securities brokerage adviser and best practices arbiter. Convenience, speed and information access — the 'net's big strong points — have always been critical brokerage differentiators. And the Internet builds on the brokerage industry's obsession with technology: Those firms with the most potent networks and most efficient processing have traditionally dominated, Gomez points out.

The numbers substantiate Gomez's gusto. A year ago there were 27 online brokerages; today there are some 52 firms wheeling and dealing on the 'net. The total number of trades per day grew from about 95,500 in first-quarter 1997 to 153,000 by the fourth quarter, according to Minneapolis investment banker Piper Jaffray, Inc. Online trading commissions are expected to triple from last year's $700 million to roughly $2.2 billion by 2001, the firm projected.

Gomez, 38, landed on Wall Street in 1985 as a bond trader, working his way up the industry's hierarchy before starting his own brokerage in 1992. He joined Forrester in 1996 as a senior analyst specializing in the Internet's impact on financial services. Sensing the 'net's pervasive potential, he formed Gomez Advisors (www.gomez-advisors.com)in mid-1997 — a consultancy and 'net-based advisory service to help Internet brokers improve their competitive standing and investors locate the most appropriate firms.

Gomez Advisors' Internet Broker Scorecard, a quarterly ranking of online brokers, has already achieved some notoriety among Web-savvy investors. It receives some 20,000 page views per day. And on the consulting side, the firm has already been retained by more than 10 brokerage firms.

Gomez recently sat down with *Computerworld* Emmerce Editor Alan Alper to discuss his Web strategy and the implications of Internet trading.

Emmerce: You describe your business as part Ralph Nader/Consumer Reports, part portal. What do you mean?

Gomez: We stand in between the consumer and the financial service provider as an arbiter of quality.

Emmerce: You're also sending prospective customers to the brokerages and receiving referral fees. Is there a conflict of interest?

Gomez: If someone comes to our scorecard looking for information about online brokers, we think that it makes perfect business sense for us to turn over that highly qualified lead.

The brokers really like these leads. It's a great enhancement to their standard banner advertising, where they are hoping for a click-through on someone that is getting a quote or reading a news article. They like the fact they are capturing people that are really in the process of choosing an online broker.

Emmerce: How much is your referral fee?

GOMEZ: That's confidential. It costs [Internet brokers] $200 to get an account that on a present value basis is worth $1,000. Our referral fee is a small fraction of the $200.

Emmerce: How do you do your ranking?

Gomez: It's a combination of factors. We do as much as we can through visiting the site. Sometimes we open accounts. We ask the brokers to provide us with a demo account so we can view the trading pages and all the secure pages at the brokerage site. We also send out a fairly detailed questionnaire. In the end, we compile about 118 different criteria points for each brokerage firm.

Emmerce: Which criteria are most critical?

Gomez: Our overall ranking takes into account cost, ease of use, customer confidence, online resources and relationship services. So we are looking for a well-

> "We are looking for a well-rounded brokerage"
>
> **Gomez Advisors' JULIO GOMEZ:**

JULIO GOMEZ rates the 'net's best securities brokerages while advising traders how to improve their lot. Conflict of interest? No, just another way to cash in on the wild, wild Web's gold rush.

WATCHING the WEB TICKER

rounded brokerage.

We also allow individuals to sort the firms based on which of those five categories is most important to them. We have detailed customer profiles that help investors pinpoint what broker qualities to select for: hyperactive traders who are cost-conscious and performance-conscious; the serious investor who invests almost as a hobby; the life goal planner; and the one-stop shopper. This is just the mass market.

Emmerce: Have there been any changes in the rankings?

Gomez: DLJ Direct seems to have our criteria [figured out]; they're a four-peat [winner]. Some of the more interesting developments are the decline of Schwab's and ETrade's ratings.

ETrade's $14.95 trade no longer looks like a bargain. Schwab's wealth of on-site resources is no longer market-leading. So it has opened the door for players like Sure Trade, Waterhouse, National Discount Brokers to come in and start to make some headway in our ranking. Another interesting thing we have seen over the past year is that no one seems to be able to duplicate what ETrade did — come in and just create a billion-dollar market cap online brand.

One exception is Web Street Securities. Their Trading Pit does live [portfolio] updates in the center of the screen. On the right is an order-entry screen so you can enter your trade while watching the market. You don't have to go to another section of the site. That contrasts with the 10, 15, sometimes 20 different pages that it takes [on other sites] to check a variety of stocks, refresh some quotes, enter a trade, get a verification, check for an execution.

Emmerce: Anything counterintuitive?

Gomez: It seems that the larger firms — Schwab, Fidelity, to a lesser degree Quick & Reilly — have had sites that have grown and grown, and committee after committee has decided to add and add [functionality and services]. In the end, more has been less. Our biggest criticisms of Fidelity and Schwab have been that their sites are out of control and are navigational nightmares. Fidelity has relaunched its site. It looks a heck of a lot better [and easier to use]. We still think it's probably too big.

Emmerce: What has been the impact on major full-service brokers? Seems some are still on the sidelines.

Gomez: In the end, the large firms will get their arms around how to use the Internet to leverage their broker networks [so] that brokers will serve more customers better. [Then] there will be a thinning of the ranks. You are not going to need a third of your brokers [in order] to serve the same number of customers you [now] have. Some of the firms that are purely based on relationship will lose to firms that have both relationship and technology.

Emmerce: People with higher net worths are probably more apt to want to trade over the 'net. Have the full-service firms suffered from opportunity lost?

Gomez: Well, they are concerned with that. They are [also] a little worried about the fact that [the Internet] is the de facto place to start for someone who is a new investor.

The key is going to be in advisory tools. How do you deliver automated financial advice, whether it's financial planning or specific stock recommendations, without triggering all of the reporting and regulatory burden that comes with being a full-service firm? It's not something that most discount brokerage firms want to get into right now. And yet it is the opening that the full-service firms are leaving.

Emmerce: How will online brokers make money in an environment where decisions are sometimes based purely on price?

Gomez: Of course volume is a critical issue, [as is] having a low-cost structure. ETrade is making money and showing significant growth and earnings. The only way that these firms are going to be able to [win] is if they find a way to tie [up] their customers.

That will be done through personalization. [Today] you have to go and input your data, input your portfolio to get it to tell you news about your stocks. You know that is something that just doesn't have to be.

An expanded version of this interview with RealAudio clips can be found at www.computerworld.com/emmerce.

PHOTOGRAPH BY SHAWN HENRY

friend OR FOE?

WEB-BASED CUSTOMER SERVICE EMBRACES SOME, ALIENATES OTHERS

By Natalie Engler

As Web commerce goes mainstream, many retailers are finding out the hard way that they can't afford to stint on customer service. Just ask Jim Coane, president and chief operating officer of New York-based online music retailer N2K, Inc.

When customers first flocked to Music Boulevard, N2K's Web storefront, Coane discovered that the company had seriously underestimated the level of service and support they'd demand.

With only six service representatives on staff, N2K had difficulty satisfying people who clamored for everything from information about the order process to help finding a certain album containing a lyric from a song they'd heard years ago. "We were surprised," Coane recently admitted, "that people on the Internet wanted to talk to a live person."

Last Christmas, the problem took center stage. In the midst of the frenzied shopping season, N2K received at least 100 calls a day, and "we got totally bogged down," Coane said.

This complaint has become a common refrain among Web merchants who thought they could economize on customer service for their site — whether by referring customers to an electronic-mail address or existing call center or by simply automating responses. Trouble is, people come to the Web expecting to save time and get a quick response. A list of frequently asked questions, a return to the old call center phone queue or a 48-hour wait for an E-mail reply just doesn't cut it.

"A lot of companies think they can just throw up [an] E-mail [address] on their Web site, and that is customer service," said Maria La Tour Kadison, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "But there needs to be a mechanism in place to handle that E-mail" in a prompt, effective fashion. Sometimes that means an immediate response or personal attention. Often it means both.

Sure, the Internet is a potential boon to budget-conscious companies. According to Forrester, for a 5,000-employee business with $650 million in annual sales, during the course of a three-year rollout the Internet can reduce the cost per customer contact by 43% and allow the company to provide the same level of service with 12.5% fewer customer service staffers. Of course, these savings hardly add up if the business loses customers due to inefficient service or added aggravation. All too frequently, this is the case.

"Up to this point, consumers have put up with a lot," Coane acknowledged. "They've dealt with [the annoyance] because they are early adopters." But there's a new breed of mass-market consumers online, and "they want everything they want when they shop in a brick-and-mortar store, and more."

The Good News

On the positive side, the Web is providing Coane and other beleaguered customer support people with increasingly viable tools to provide faster, more efficient and hopefully more cost-effective ways of providing that crucial customer service.

While it's true the promise of real call center/Web integration hit "a little bit of a hiccup" last year, due to security issues and the poor quality of voice over the Internet, in the meantime "data-centered-type approaches" are coming to the rescue, said Robert Mirani, senior analyst at The Yankee Group in Boston.

These new solutions include self-service applications that rely on knowledge-based systems, as well as software and hardware that give customers online access to "live" customer service representatives via a separate telephone connection or one-on-one PC links.

With self-service Internet applications, customers visiting a Web site can query an intelligent database as they would a live service rep. Even if a customer can't name the exact problem, he can type a sketchy message ("my CD player skips"), and the database leads him to the solution ("Is it a portable CD player?" "Does cleaning the CDs correct the problem?" "Is the unit exposed to vibration [located near speakers]?"). That is precisely the approach Kenwood USA Corp.'s online troubleshooting system takes (see story page 12).

American Finance and Investment, Inc. is deploying software from Brightware, Inc. to save itself — and its customers — money. Using a knowledge base that relies on artificial intelligence technology to route and answer E-mail questions automatically, the system responds to 60% of incoming questions within five seconds, said Jack Rodgers, president of the Fairfax, Va.-based online mortgage lender. It took two employees plus a Brightware representative three months to build. After eight months in use, it enabled American Finance to reduce its customer service staff from four to two, despite a 400% increase in E-mail traffic. The software, Rodgers added, has paid for itself twice already, enabling the

Please turn to next page

ILLUSTRATIONS BY CHRIS LENSCH

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company to reduce the cost of an average mortgage by $1,500.

But while these savings sound enticing, self-service alone may not be enough, said David Cooperstein, an analyst for telecom strategies at Forrester. "The goal should be to get agents off the phone and doing really good interactions."

This means using self-service databases to intelligently answer simple and frequently asked questions, thus leaving the complicated queries to "live" customer service reps who can be reached via the click of a button.

The most evolved applications then allow these so-called "cyber reps" to track a customer's path through the Web and push multimedia drawings, video and other applications to a customer's browser, while talking him through procedures. This gives reps more freedom to upsell, educate and even help customers navigate the site so they can do it on their own the next time. Forrester calls this type of interaction "teleweb" and predicts that teleweb sites will handle 5% of all live agent interactions in the next five years.

Putnam Investments, Inc., a financial services company, has introduced a teleweb voice and image communications system using Contact software from Webline Communications Corp. The application allows financial advisers to click on a button on the company's password-protected Web site, which downloads a Java applet to their browsers and simultaneously calls a Putnam representative. Once connected, customers can ask questions, share documents or spreadsheets and receive help navigating the Web.

To get the most out of these applications, however, customers still need to have two phone lines or a separate Internet connection for now. And while many have this setup at the office, few do at home. To overcome this temporary obstacle, some Web merchants are taking an interim step and introducing one-on-one, keyboard-to-keyboard communication.

Sound of a Human Voice

One such company is SoundStone Entertainment, a 4-year-old, high-end music retailer based in Somerville, Mass., that has kiosks in stores around the country. SoundStone is using CustomerNow, a component-based customer service system from SiteBridge (formerly Social-Science, Inc.), to bolster its Web site with a human element.

Customers who access the SoundStone Web site want to know they can talk to someone, said Kevin Sheehan, SoundStone's president. For the past year, the company has relied on E-mail, which Sheehan said is a "lousy way to communicate" because people want to interact in real time. Now they can, regardless of their hardware or software configuration.

When a customer requests service at the SoundStone Web site, the SiteBridge software runs an autosensing process that determines the customer's browser type and version, hardware platform and enabled features. Based on those variables, the software allows the customer to converse with a SoundStone customer service representative via a chat-type window.

SoundStone saves $2 per contact in telephone charges, creates a detailed paper trail of every customer interaction and is able to monitor the number of calls on hold, the number of calls being serviced and the service level. Customers can discuss Latin jazz with SoundStone employees and ultimately, Sheehan said, "recreate the days when they had that best friend in high school who knew all the lyrics."

Some people fear these types of cus-

Please turn to page 12

Spoon-feeding Internet Newbies

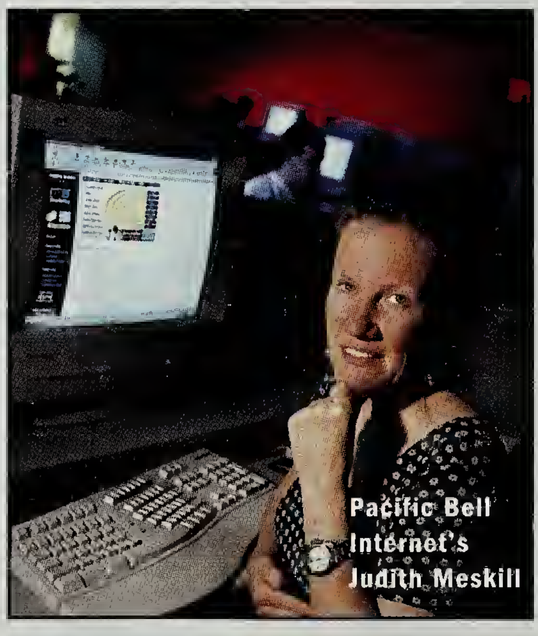
■ WHO: Pacific Bell Internet Services, an Internet service provider so committed to customer care that it spends $35.09 for each call hour of support and pays reps more than $40,000 a year.

■ URL: public.pacbell.net

■ THE CHALLENGE: To support more than 100,000 subscribers, many of whom are new to the 'net. Their questions range from "What is my password?" to "How do I configure my new PC and modem?"

■ THE SOLUTION: EService from Silknet Solutions, Inc., overlaying a knowledge-based system from Advantage Kbs, Inc.

■ HOW IT WORKS: When a customer arrives at the Web site, he types in his problem (in English), and a knowledge base leads him toward a resolution. If stymied, he submits a "trouble ticket" for a customer service rep. But by then, he's had the chance to refine the question and rule out possibilities, leading to a faster, simpler resolution.



Pacific Bell Internet's Judith Meskill

■ THE COST: Pac Bell Internet had a development agreement with Silknet. Typically, pricing for eService begins at $150,000.

■ THE BENEFITS: The system, which took three months to implement, has enabled Pac Bell Internet to hold the number of call center agents to a couple hundred, despite rapid growth in subscribers. And its service was recently rated No. 1 in quality and cost by Washington Competitive Group LLC, a Washington-based research house.

PHOTOGRAPH BY ANDY FREEBERG

Helping Consumers Help Themselves

- **WHO:** Kenwood USA
- **URL:** www.kenwood.com
- **THE CHALLENGE:** To route as many questions as possible to the Web.
- **THE SOLUTION:** A knowledge base from Inference Corp.
- **HOW IT WORKS:** Customers can download instruction manuals and literature for home and car audio products and troubleshoot problems they're having with their home audio systems with an interactive question-and-answer session.
- **THE IMPLEMENTATION:** It took one person almost four months to launch the knowledge base. Today, four people work part-time adding new information and products. Kenwood wants to introduce a car audio troubleshooting system next, but the company is waiting for Inference Corp. to release its upgrade Web version.


Kenwood's Andra van Deusen

- **THE COST:** $70,000 plus $25,000 a year for support.
- **THE BENEFITS:** The system has eliminated fulfillment of instruction manuals, which used to take place through an 800 number and cost the company $100,000 a year in telephone charges and postage. Kenwood has also reduced the number of phone calls to customer service agents by approximately 12%, resulting in a savings of roughly $20,000 to $25,000 a year.

PHOTOGRAPH BY ERIC MYER

Continued from page 10
tomer interaction systems will drive up the cost of customer service by lengthening the time spent on each customer contact. Indeed, for support-type and frequently asked questions, that's a valid concern. But for most companies, which according to Forrester are offering Internet customer service to create convenience rather than cut costs, Web access to live representatives can be a huge asset.

That is certainly the case for Putnam. "We are not rolling this out as a cost-saving issue," said Mark McKenna, senior vice president and group director of communications. "We are looking at it as a requirement to continue being a top-flight service organization."

The Not-So-Good News

Sure, the market for these types of applications is poised to explode. According to research firm Aberdeen Group, Inc., the total market for customer interaction software is more than $1 billion and growing by 40% each year.

And early adopters are lining up. Just two years from now, companies expect to shift almost one-fifth of their customer service contacts from the phone and fax to the Internet, according to a survey by Forrester.

But these numbers cloud the reality that we're still at the base of the mountain. At this stage, most of the companies we interviewed are in beta testing or very early rollout phases, and many said they are still working with their vendors to perfect the product offerings. Even more important to note, providing truly enlightened customer service takes more than a day or two of meditation. For most businesses, a six- to 12-month period is obligatory, as is an investment of well over $100,000. And the technology is only a part of the equation. The other is staffing.

Creation of knowledge bases is a lengthy process hindered by a dearth of "people who know how to develop expert system rules," said David Stoltzfus, chief technology officer at Logical Design Solutions, Inc., a Morristown, N.J., systems integrator that specializes in self-service, Web-enabled applications. For companies such as N2K that are integrating call center applications, databases and their Web infrastructure, the issue is even more critical.

The music retailer has already increased the number of representatives it has from six to 33 and is in the process of creating a new service organization from the ground up. The goal, Coane said, is to build a sophisticated customer information management system and call center with software containing automated instructions and querying capabilities. Eventually, customers should be able to bring up their order history, order status and details about when they can purchase the next album by, say, Erykah Badu.

That's why he's recruiting people from financial services firms and catalog retailers for expertise and is carefully evaluating technologies while investigating ways to more efficiently integrate the company's online and off-line activities.

All told, the effort requires an investment to the tune of "millions of dollars" in people costs alone, Coane said. In effect, "it will be like creating a new business," he added. "That's why we're so hell-bent on doing it fast and doing it well."

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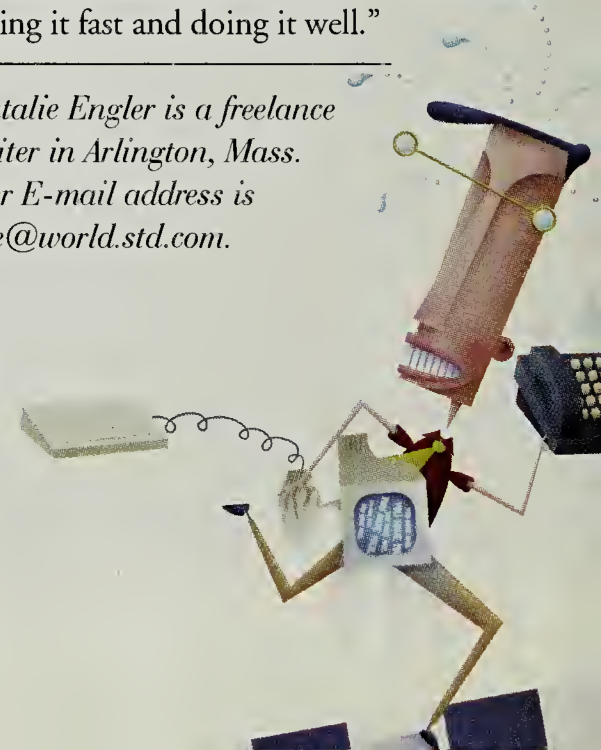

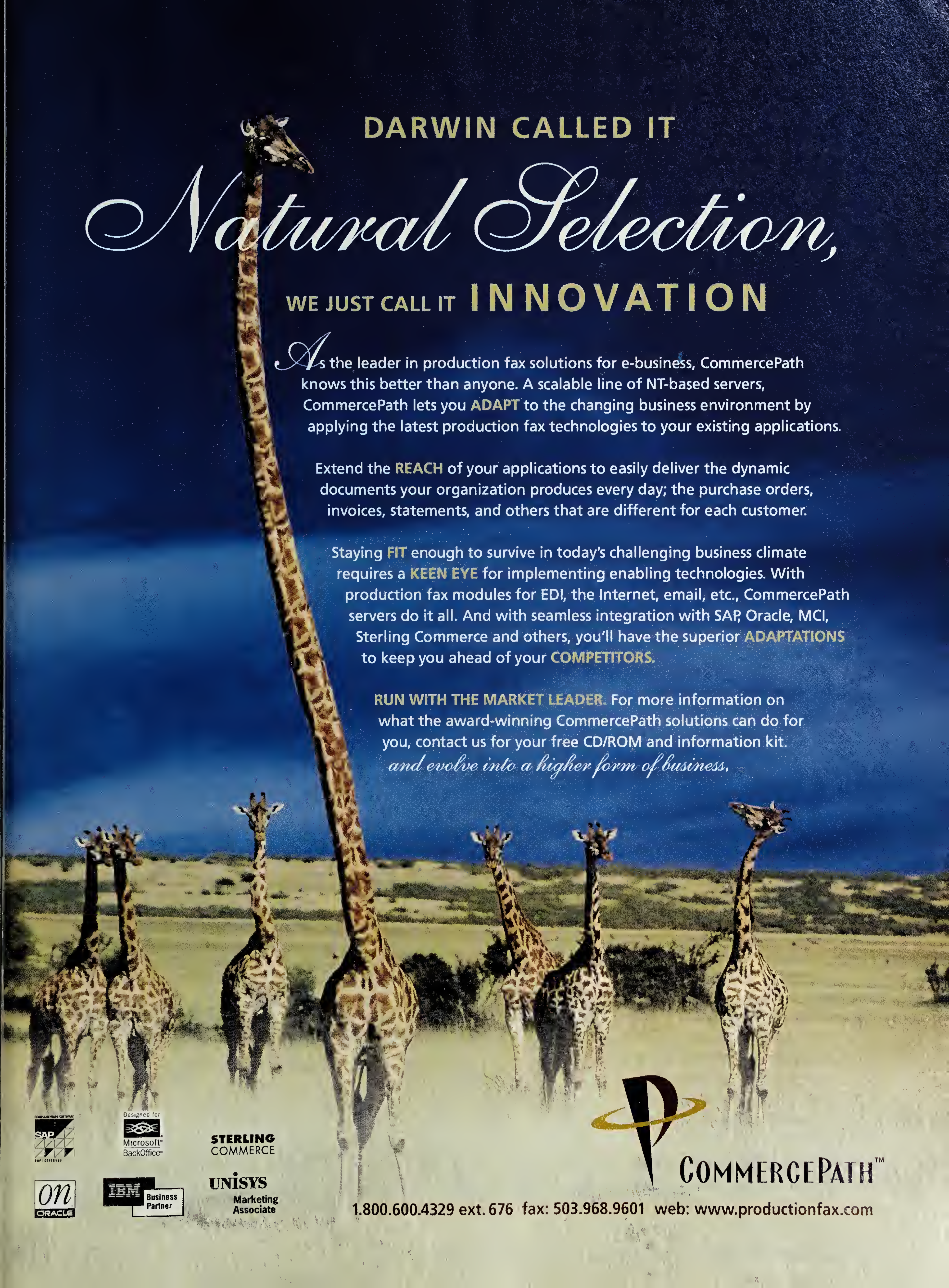
DARWIN CALLED IT
Natural Selection,
WE JUST CALL IT INNOVATION
As the leader in production fax solutions for e-business, CommercePath knows this better than anyone. A scalable line of NT-based servers, CommercePath lets you ADAPT to the changing business environment by applying the latest production fax technologies to your existing applications.
Extend the REACH of your applications to easily deliver the dynamic documents your organization produces every day; the purchase orders, invoices, statements, and others that are different for each customer.
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CASTING *a wider* NET

Affiliated programs that tie advertising costs to sales rather than impressions enable Web merchants to stretch their marketing dollars even further

BY ELISABETH HORWITT

Several months ago, eToys, Inc. decided to sweeten its Web advertising affiliates program, big time. Instead of receiving 12% of the revenue their ads generate for the toy e-tailer, affiliated Web sites can now earn a whopping 25%.

"We realized we were shooting ourselves in the foot by being cheap," said Phil Polishook, vice president of marketing. The Santa Monica, Calif., company hopes to "incentivize affiliates to promote us more and get more affiliates interested in the program," he added.

So far, results have exceeded expectations on both fronts. "Affiliates promote us more, at higher-level pages," Polishook reported. Further, the number of affiliates in the program has gone from 20 to 60 since the 25% commission debuted. "And the program is still cost-effective," Polishook enthused. The toy company is willing to pay $10 for every $40 sale right now because "we're in growth mode now," more interested in "getting bodies in the door" than in profits, he added.

Traffic, in a nutshell, is why affiliated or syndicated marketing has become the hot new Web marketing vehicle.

The concept is simple. A Web site agrees to host a merchant's ad or trademark with

ETOYS' PHIL POLISHOOK: 'We realized we were shooting ourselves in the foot by being cheap'

PHOTOGRAPH BY ERIC MYER

URL in return for an agreed-on percentage of whatever sales result from ad click-throughs. No sales, no pay. This is in contrast to classic banner ad rate structures, where merchants pay up front for how many impressions, or hits on an ad page, a site can deliver.

Because downloading an ad page in no way guarantees the user will read the ad, let alone click through to the site or buy a product, classic banner ads tend to cost far more per sale than syndicated ads, said Brian Bock, president of Bock Interactive, Inc., a Burlington, Vt., Web marketing consulting firm.

Numbers that affiliated advertising programs reported bear this out. A recent analysis by eToys, for example, found that a $40 sale costs $20 or more, while the same sale costs only $10 under the current commission structure.

Forrester Research, Inc.'s "Syndicated Selling" report, published in December, came up with even more dramatic numbers. Based on a survey of 51 leading commercial Web sites, the report concluded that banner advertising cost $67 per sale, compared with only $4.60 per syndicated marketing sale. The basis for these numbers is survey findings that Web merchants paid an average 9.2% commission to their ad affiliates and average $27,000 cost per million (CPM) for banner ad impressions and that banner ads had a click-through rate of 2% and a conversion rate of 2% (or 400 sales per 1 million impressions).

Advertising affiliates tend to be small, revenue-hungry, nonprofit sites — clubs, chambers of commerce, specialized magazines and the like — that want to sell ads "as a way of paying the rent" on their Web site, Bock said. Such sites cannot generate the traffic of a Yahoo.com. On the other hand, they tend to be more niche-oriented and willing to go that extra mile — place an ad more prominently or next to related material — for an advertiser that offers the right incentives. That makes such sites ideal vehicles for targeted marketing.

Given such a plethora of advantages, it's no wonder 67% of the Forrester survey's respondents said they pay for ads on a commission basis, while 57% said they bought banner ads at CPM-based rates. Furthermore, 35% of respondents cited syndicated ad sales as the most effective kind of Web advertising space and placement, while only 16% cited "run of site banners."

Syndicated, commission-based sales are "advertising nirvana" for merchants, Bock said. "It eliminates the flop factor." Unlike their TV or magazine equivalents, syndicated Web ad campaigns cost the advertiser nothing when they miss their mark.

Doing syndicated ads anywhere but on the Web would be difficult, if not impossible, Bock noted. Cookies and embedded scripts in URLs allow Web retailers to identify the exact site and ad page that brought a visitor to their site, record the purchases made during the visit and then credit them to the right advertising affiliate. The closest equivalent to this in print ads is fill-in cards that ask customers where they heard about a particular retailer or product.

EXTENDING THEMSELVES

With little or no flop factor to contend with, merchants can afford to cast a far wider advertising net. CDNow, Inc., for example, currently has 16,000 affiliates posting its ads. Amazon.com, one of the pioneers of both Web-based commerce and affiliated advertising, has 30,000 affiliates.

And smaller sites and start-ups can afford to generate brand recognition and sales, even on a tight budget. Helping them along — unlike the big guys, small retailers rarely have the resources to build their own program infrastructures from scratch — is a small but growing affiliated ad industry.

Electronic commerce software vendors such as Viaweb, Inc. in Cambridge, Mass., and Be Free Corp. in Pittsburgh provide software to take care of much of the grunt work. Vermont Teddy Bear Co., for example, used Viaweb's Store 4.0 software to set up its affiliate program, generate the URLs with embedded scripts that affiliates embed in their sites and track sales and generate reports "on visits, orders, revenues and who you're linked to," said Hillary Sulcov, Internet marketing manager at the Shelburne, Vt., firm. "It's very easy to maintain."

"We tried advertising on a bunch of search engines for a lot of money and getting horrible results," Sulcov said.

Please turn to next page

YOUR **AD** *goes here*

MERCHANTS ARE DISCOVERING, to their delight, that Web affiliate programs make ideal vehicles for context-sensitive advertising. This is the increasingly popular practice of embedding more narrowly focused ads – for a product or a short-term promotion, for example – on an area of a page that is specifically related to what the ad is selling.

Why do affiliate and context-sensitive advertising work well together? First of all, revenue-hungry affiliate sites can often be persuaded to run special ads on different pages in hopes of boosting sales and therefore their own commissions, said Brian Bock, president of Bock Interactive.

And merchants can afford to place multiple ads on one site without fear of wasting their money.

BarnesandNoble.com, for example, offers 150 types of links to its site so affiliates can customize pages to particular categories of books, promotions and so on.

Niles Lannon, program manager at CDNow, swears by context advertising. While refusing to give numbers, "I can definitely say that contextual links are much more effective, meaning higher click-through and conversion, than run of the mill banner ads. With banner ads, you buy from someone like Doubleclick, you're looking at very little connection with [the site hosting the ad], other than broad demographics," he noted. CDNow's affiliated program, by contrast, works with Web sites "for a specific band or genre, which makes marketing extremely effective."

And CDNow gives its affiliates plenty of incentive to display special ads. For example, Van Halen sites get to offer visitors the chance to order a new CD before it comes out, Lannon said. "We ask those sites to promote this advance order, and the one that sells most gets a signed drumhead from Alex Van Halen. It's like lighting a fuse – [affiliates] love it." And sell it, big time.

– ELISABETH HORWITT

Continued from page 15

"We'd spend $1,000 and get maybe four orders." The program hasn't been around long enough to measure returns, she added.

FARMING OUT GRUNT WORK

And for those that want to outsource program management, there's LinkShare Corp. In exchange for a small sales commission, the New York-based company provides software for setting up ad URLs, as well as sales tracking and accounting services. So far, about 80 merchants have signed up.

One of them is Omaha Steak, Inc., which has 100 affiliates in LinkShare's program and has realized an increase in online sales of about 15% since joining, according to Stephanie Healy, interactive sales manager at the online and catalog steak purveyor.

One big boon LinkShare offers its members is access to some 4,000 prescreened, nonprofit sites as potential affiliates. Finding the right affiliates — ones whose sites attract potential customers — can be tough. Persuading them to sign up can also be a challenge, particularly if you're small or a newcomer in a competitive market.

A growing number of merchants are trying to lure affiliates with a bigger share of revenue. In April, for example, CDNow boosted the top commission paid to its Cosmic Credit affiliate members from 5% to 7%. The online CD store also started offering cash payments, as opposed to store credit, to any site whose ads bring in more than $100. Third, it introduced "a very involved series of bonuses," said Niles Lannon, the program's manager.

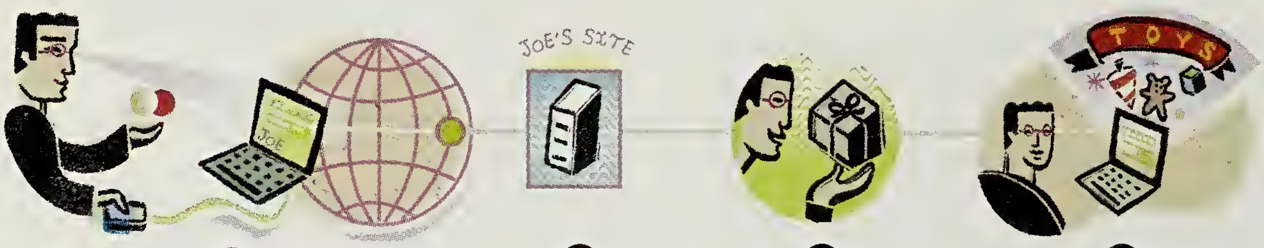
While CDNow introduced the new setup too recently to judge results, Lannon said he is confident he made the right move. Increasing affiliates' profit gives them "the incentive to produce and keep on producing" more CD sales, he noted.

Then there are sites that offer special services and support to keep their affiliates happy, making them feel, in fact, like partners rather than advertising billboards. At a minimum, most Web retailers provide their affiliates with automated downloading of an ad URL at the click of a button, as well as sales tracking and reporting.

But some sites are going a lot further.

WHO GETS THE CREDIT?

Web storefront software such as Viaweb's Store 4.0 can track sales from click-through to credit card, so merchants know who gets a commission



1. Customer goes to Joe's Web site
2. At Joe's, customer clicks on ad for toy site
3. Customer's browser receives packet: "Joe sent me"
4. Customer's purchases at toy site get credited to Joe

"We define ourselves as a service business, and we take it very seriously," said Bill Lederer, founder and president of Artuframe.com, an art print and framing site that went online in April. "Unless you're prepared to listen carefully to their needs and provide a customized [advertising] solution that fits for them and not just you, click-throughs and conversion rates will not be meaningful for either party."

In addition to handling all of the infrastructure and administration, Artuframe works with affiliates on ad design. For example, it creates "special banners for some popular artists, as well as for certain art themes," Lederer explained.

BarnesandNoble.com, Inc. is another Web retailer using service to differentiate its affiliate program from those of rivals. For example, an account executive is available to help affiliates set up the URLs and fine-tune ad placement. Seven types of reports enable affiliates to track sales down to individual books and analyze the effectiveness of ads, promotions and placement. And "co-branding" allows affiliates to leverage the bookstore giant's brand recognition.

A Barnes and Noble spokesman said the program was working well but declined to give numbers.

ON THE DOWNSIDE

The big downside of syndicated advertising, marketing managers say, is it takes a lot of manpower, particularly if a retailer is providing customized affiliate services that go beyond customer tracking and accounting.

"A third of our staff is now assigned to marketing, consumer and affiliate relations," Artuframe's Lederer said. "It really takes [a lot of resources] to achieve effective results," he added, with an exhausted laugh.

But the results have been well worth the effort. "We had test sites up to take a look at click-throughs and conversion rates, and my understanding is we're operating at three times the industry average," Lederer said.

The average for affiliate marketing programs, based on independent research from Artuframe, is 0.5% to 3% on click-through rates and 2% to 15% on conversion rates.

Fortunately, too, a syndicated marketing program tends to run itself with minimal human intervention, provided the underlying infrastructure is set up right.

CDNow, for example, provides information services to affiliates primarily through its own Web site, "which we keep very updated," Lannon said. "It's really cost-effective."

Horwitt is a freelance writer in Waban, Mass.

Amazon.com	**BarnesandNoble.com**	**eToys**
www.amazon.com	www.barnesandnoble.com	www3.etoys.com
Artuframe.com	**CDNow**	**Vermont Teddy Bear Co.**
www.artuframe.com	www.cdnow.com	www.vtbear.com

ILLUSTRATIONS BY BECKY HEAVNER

A CYBERSTORE-Y

Education toys distributor looks to turn more of its site's browsers into buyers

BY ALAN ALPER

New Year's Eve 1997. The very first Web holiday season had just come and gone, and The Holt Co., a Waltham, Mass., distributor of educational toys and home and office furnishings, couldn't believe its good fortune.

Its 3-month-old Web commerce site, which offers more than 20,000 brand-name educational toys such as Brio and Playmobil, teaching supplies and children's furniture at discounts of up to 50%, delivered more than 1 million page views. And despite minimal promotion, the site generated more than $50,000 in incremental revenue. Less than Holt had expected but not shabby, given the site's limited outreach.

Holt is now looking to turn a greater percentage of the site's browsers into buyers. The company's revamped site, which debuted in April, offers a look at where electronic commerce is heading: tight integration of Web and operational systems and more personalized buying experiences that promote customer loyalty, create specialized communities and enable up-selling and cross-selling opportunities.

If it all comes off, the small, privately held company believes it will have extended its Web reach beyond parents, gift givers and home educators to volume purchasers — schools, daycare centers and facilities designers — not just in the U.S., where it does most of its business, but around the world.

"They redesigned their business around a new model," said David Marshack, an analyst at Seybold Group in Boston who has closely studied Holt's transformation. "Not many companies can do that." But building and hosting its own site and gaining Web technology savvy is not for the faint of heart, he pointed out.

Indeed. Last year, Holt spent about $750,000 developing its site and revamping its crusty old internal systems. Holt expects to spend roughly $1.75 million more this year building up its Web commerce skills, technology and market presence. That's not chump change to a $10 million a year, family-owned business growing at 35% annually.

But Holt is willing to take the plunge, even if the return on investment is beyond the $2 million in business it hopes to ring up on the 'net this year and requires a yet-unrevealed amount of outside equity financing. "Our systems were real disgusting, so we felt we might as well invest now and gear ourselves for the future," Chief Executive Officer Paul Holt said. "In that way, it wasn't as big of a risk as it seems."

Holt also realizes that even though its primary competitors such as Learning Express and Noodle Kidoodle, Inc. are small, Web commerce leapfrogging is as common as child's play. And hesitating now would be a big mistake, as better-known players such as FAO Schwartz dabble on the Web, and 'netrepreneurs such as eToys, Inc. make their Web presence felt.

> **"Our systems were real disgusting, so we felt we might as well invest now."**
>
> PAUL HOLT, HOLT CEO

"We think Web shopping will take off in the next 10 months in the mass market in advance of the holiday season," said David Lord, Holt's chief information and chief financial officer, who masterminded the firm's electronic commerce initiative. "We're in a leadership position and need to press it."

FORGING NEW GROUND

But being a pioneer in Web-based toy selling is tricky. For instance, many of Holt's initial Web customers were 'net novices who came to Holt's retail outlets with shopping lists printed from its site because they either feared the Internet or wanted to save on shipping. "They all love the site but wouldn't buy," Paul Holt revealed. To help facilitate in-store ordering, the site now offers the ability to print out an order with the shelf and bin number to make it easier for customers to locate products.

Holt hopes such fine-tunings will translate lofty Web dreams into reality. Other initiatives include the following:

- Getting inside customers' heads by tracking customer visits through the use of cookies and applying advanced personalization and profiling techniques delivered with Microsoft Corp.'s Site Server 3.0.
- Transparently fulfilling orders and posting content generated by The National Parenting Center, a not-for-profit children's toy tester and content producer.
- Building communities via topic-specific content areas and chat rooms hosted by child education experts and suppliers.

On the back end, Lord is betting heavily that tight integration between Microsoft's Site Server and Great Plains Software, Inc.'s Windows NT-based accounting and order-processing software will accelerate the returns. Web/back-office integration is among the stiffest operational drags on the Web today, Seybold's Marshack contended. "An order on the Web is an order — it's not a separate process," he said. Holt's integrated approach "shows a lot of foresight and is a good example for others."

But as is usually the case with Microsoft, Lord realizes he's buying technology futures and Redmondian religion. For instance, Site Server 3.0 went into production only late last month. And Holt can only hope NT and SQL Server will scale up to his site's expected transaction growth.

Why is he so devoted? Microsoft's Web commerce approach, built around Windows standards, allows various software servers to share objects via its Distributed Component Object Model (DCOM) architecture, and each key software compo-

HOLT'S FAMILY INCLUDES *(back row, left to right)*: Edward Holt, Roselyn Holt, Karen Holt Brenner and Paul Holt; front row *(from left)*: David Lord and Deborah Bamford

nent, from Web Server and Transaction Server to Active Page Server and Exchange Server, can be housed on dedicated NT servers or clusters of machines. So if Holt's business builds beyond Lord's wildest expectations, Holt can boost performance by adding Wintel servers to the Advanced Logic Resource, Inc. six-processor machine that's currently powering the site, he explained.

Throwing hardware at performance issues is less costly than tweaking, rewriting or replacing software, Lord added. "I'll take that problem," CEO Holt chimed in.

And to build new applications and maintain or extend existing ones, all Lord needs are Visual Basic programmers — a fairly easy, lower-tech commodity to hire in today's tight skills market. Overall, it's a good risk to take, said Chris Stevens, an analyst at Aberdeen Group in Boston: "Microsoft's price/performance argument is extremely strong in Internet commerce, particularly if its [products] are deployed properly."

And Great Plains' software is critical to that equation. DCOM components built for Site Server can be fed through the Microsoft pipeline and processed by Great Plains accounting and order processing modules. This means price and discount schedule changes and gift wrapping and shipping fees can be recalculated on Great Plains software and reflected on the Web. Lord said he believes this approach will lower transaction costs by about 75% overall. Much of the savings comes from labor reductions.

With its infrastructure in place, Holt is going on the marketing offensive. The company is helping users create buying profiles, which are stored in a Site Server directory. Holt has written business rules attached to specific profiles that activate Active Server pages for delivering data tailored to customers' specific tastes, age and price levels.

The information can be pushed at registered users via direct electronic mailings with embedded HTML purchase offers using Microsoft's Buy Now technology. That's key because 50% of Holt's Web revenue comes from repeat business, Holt estimated. Gift registries and birthday clubs also come with the privilege of membership. Self-selected gift givers, such as grandparents, can be sent E-mail informing them of their grandchildren's gift wishes. Or the E-mail can function as cross- and up-selling tools. "Last year you got such and such product for so and so; this year he'll really like this," Lord said.

And to better understand what customers may want, Holt is attaching cookies to customers' browsers to track their meanderings through the site. "[There's] a point you need to track some things for [Holt's] benefit — and the customer's," Lord said.

Holt's strategy also draws heavily from the synergy between the physical and cyber worlds. The National Parenting Center deal, for instance, plays off of Holt's distribution and fulfillment clout. Holt, in return, will have access to the center's content on everything from reviews on top-rated toys to parenting tips to infancy and pregnancy issues. This should help consumers make buying decisions, Lord said. Holt will also process orders made from the Web site, paying the not-for-profit a royalty on each transaction.

The center sees Holt as another outlet to spread its "responsible parenting" gospel, noted organization President David Katzner. "We're impressed [with] what Holt has done and their vision," he said.

These initiatives, including Holt's participation in the Yahoo/Junglee/Visa comparative shopping initiative, are expected to help Holt build a Web-pervasive presence in time for Holiday Season '98. That's key, Holt said: The toy industry does almost two-thirds of its business in the weeks leading up to Christmas.

WHAT CUSTOMERS THINK

So far, customers like what they see. Page views are back to the 1 million per quarter rate. Not bad for the slow part of the year. Carol Siska, who home-schools her five children, ages six to 15, in Mantua, Ohio, outside of Cleveland, has already bought $800 worth of educational toys and books. "I found [the site] easy," she said. "And I don't have to waste gas or take the kids with me to do my shopping."

John Thorpe, president of Playmobil USA, is similarly impressed with Holt's Web approach. The U.S. arm of the $500 million Nuremberg, Germany, toy maker expects the Web to contribute $250,000 in sales this year, with a large chunk coming from Holt's site. He termed it a small but important start. "I'm looking at this as a long-term thing," Thorpe explained.

Lord, a bean counter turned cookie counter, is confident his Web gambit will work out. "E-commerce is the bringing together of the Internet with financial accounting," he concluded, intimating that those organizations that don't make their accounting systems a critical part of their Web presence will become dinosaurs.

Alper is Computerworld's Magazines Group editor.

e The Holt Co.
www.holtoutlet.com
The National Parenting Center
www.tnpc.com/mall/

PHOTOGRAPH BY SHAWN HENRY

CEOs haven't a clue about the CHIP-BASED WORLD *hurtling* → towards them from the future.

*Reprinted with permission: Price Waterhouse/World Economic Forum Annual Survey of CEOs . This survey captures the perspectives of nearly 400 global CEOs chosen from a sample of the world's 2000 largest companies across a wide spectrum of industries. Copies of the survey results can be obtained by e-mail: natalie_kontra@pricewaterhouse.com.

Off THE Books

COMPILED BY CARLA CATALANO

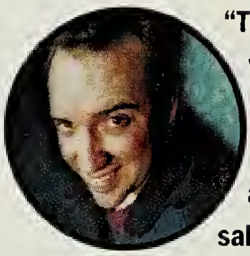
WHAT **DID** YOU **EXPECT**?

We asked early Web pioneers if their expectations of the Web business have been met

Cliff Sharples
CEO and president
GARDEN ESCAPE, INC.
www.garden.com

"We've invested heavily in our own proprietary technology, mainly because there wasn't a lot of software out there to do electronic commerce two and a half years ago. We also wanted our nontechnical staff to be able to change the site directly without going to HTML, which would have crippled our growth, since 90% of our site is changed by them. Using our own software lets us deliver custom products — The Garden Doctor, The Garden Planner and Garden Escape magazine — things we couldn't have done with an off-the-shelf application."

Will Pringle
President
THEPROSHOP.COM
theproshop.com



"The day after we went online [in April '96], we had a $1,500 sale. Now we have 12,000 products in a Progress database. Our golf pros can create 500 pages a day without knowing HTML, CGI or any other language. Initially, we wondered whether consumers needed to touch, swing and feel the equipment before purchasing it. But that hasn't been the case for two reasons: Golfers are businesspeople with little time to shop, and our products are 10% to 40% cheaper than regular pro shops because there's no overhead and no sales tax in Florida."

Darryl Peck
President and CEO
CYBERIAN OUTPOST
www.outpost.com

"The Internet has exceeded our expectations in every way, with 10 times the revenue growth and customer base than we expected [in early 1995]. We work hard to keep up with our site's rapid growth, which means we've spent more money maintaining the site than anticipated. Fortunately, there is no shortage of tools out there to do that. Recently, we received $22 million in funding so we can continue to build our market share and brand equity, which is a huge opportunity for us to grow our business. We're not surprised we needed that much money."

Bob and Arminda Alexander
Owners and operators
HAWAII'S BEST ESPRESSO CO.
hoohana.aloha.net/~bec/bus.html

"Years ago when we put Hawaii's Best Espresso online, we thought somebody might buy a cup or two. We broke even our first week, and it's been good ever since. I thought this was quite a deal: For $500 we could reach the world, compared with the gamble of a 2% return for direct mail marketing. Overhead only costs $50 a month, compared with the $8,000 it cost us when we had a shop in Hawaii. [But the Web site] doesn't bring in a huge amount of money. When a client asks me to build a Web site for them, I spend two-thirds of the time talking them out of it."

EDI **Fallacies**

If you work at one of the many Fortune 1,000 firms using EDI, you know it didn't come easy. Now many small to medium-size companies are still searching for ways to tame unwieldy procurement processes. Some are investigating EDI but worry about the expense and complexity of VAN providers. Others see the Internet as a less expensive and more flexible conduit but have security concerns. No matter the transport method, there are more EDI misconceptions than opinions on Microsoft. Here's a checklist from Tony Tadross at Tadross Associates in Brooklyn, N.Y., whose session at the recent DISA conference in Orlando, Fla., helped sort EDI truth from fiction.

EDI . . .

. . . specifies how data is transferred. ***(Not true — it could go by carrier pigeon just as well as by the network.)***

. . . transfers funds to and from your business. ***(Sorry, this is a proprietary ACH banking transaction, not an EDI function.)***

. . . is a stable, static environment. ***(Think again. There's tons of change going on, and companies need to keep up to date.)***

. . . requires all the specs in the ANSI X12 Standard. ***(Not really — 98% of EDI is optional.)***

. . . enables you to work across multiple industries. ***(Not so. Each industry has its own implementation guide that's a subset of the X12 standard.)***

. . . ensures application processing. ***(No way. EDI will only acknowledge acceptance, not promise you that data gets processed.)***

For Tom Austin's complete article, see "EDI For the Rest of Us" at www.computerworld.com/emmerce. Austin can be reached at austin@ibg.com.

PHOTO COLORIZING BY BETSY HAYES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• "Bookshelf," an emporium of IT-related book reviews from leading industry figures
• Marketplace, an interactive buying/selling forum for used computer equipment
Find it @Computerworld, the online connection for information technology leaders